DOCUMENT RESUME

ED 445 564 FL 801 410

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TITLE Finding and Evaluating Adult ESL Resources on the World Wide Web. ERIC Q & A.
INSTITUTION National Clearinghouse for ESL Literacy Education, Washington, DC.
SPONS AGENCY Office of Vocational and Adult Education (ED), Washington, DC.
PUB DATE 2000-10-00
NOTE 6p.
CONTRACT ED-99-CO-0008
AVAILABLE FROM NCLE, 4646 40th Street, NW, Washington, DC 20016; Tel: 202-362-0700, ext. 200; E-mail: ncle@cal.org. For full text: http://www.cal.org/ncle/DIGESTS.
PUB TYPE ERIC Publications (071)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Adult Education; Computer Uses in Education; *Educational Resources; *English (Second Language); *Literacy; *Online Searching; Second Language Instruction; Second Language Learning; *World Wide Web

ABSTRACT

One of the challenges often mentioned by users of the World Wide Web is creating and implementing successful searches on topics of interest. This article provides background information about adult English-as-a-Second-Language (ESL) resources available on the Web. It describes various search tools, explains how to create search strategies and how to combine the right tool with the right strategy for finding specific information, and suggests ways of evaluating Web resources resulting from a search. Although written for adult ESL practitioners, this Q & A is appropriate for all educators seeking efficient ways of locating resources on the Web. The article begins with a description and overview of the Web. The specific details of how materials are accessed is then explained. Next, the four most common tools for finding information on the Web are described--search engines, directories, Web loops and rings, and portals. Suggestions for exactly how to frame and limit choices by choosing search words carefully is then reviewed, with tips for preparation, creation and execution, and review and revision provided. Evaluating the accuracy and usefulness of the search results is the final step covered. It is hoped that following all the steps and suggestions provided will make Web searches less daunting and more productive. Fourteen references are cited. (Adjunct ERIC Clearinghouse for ESL Literacy Education) (Author/KFT)

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ED 445 564

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Finding and Evaluating Adult ESL Resources on the World Wide Web

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One of the challenges often mentioned when people discuss the World Wide Web is creating and implementing successful searches on their topic of interest (Digital Divide Network, 2000). A 1996 study of adult educators' uses of the Internet reflects this concern. The professionals studied mentioned having limited time and opportunity to access the Web and to master searching techniques (Rosen, 1996). The result is often frustration and even skepticism about the availability of relevant materials on the Internet.

This Q&A provides background information about the Web; describes various search tools, explains how to create search strategies and how to combine the right tool with the right strategy for finding specific information; and suggests ways of evaluating the Web resources resulting from a search. Although written for adult English as a second language (ESL) practitioners, the Q&A is appropriate for all educators seeking more efficient ways of locating resources on the Web.

What is the World Wide Web?

The World Wide Web, like e-mail and online chats, is part of the larger information and communication system called the Internet. The Web structures how information is disseminated and displayed on the Internet. It has become the most popular part of the Internet, combining text and multimedia and pulling other Internet components together in an integrated, accessible system (Hacker & Capehart, 1999; Lankes, 1996; Sperling, 1998; Warschauer, 1995).

The Web was developed at CERN, the European Laboratory for Particle Physics in Switzerland, as a means for scientists to connect their research in a more standardized, navigable way (Lankes, 1996). The first publicly accessible Web site was posted in 1993. In June 1993, there were approximately 130 Web sites. Five years later, in April 1998, there were over 15,000,000 sites (Hacker & Capehart, 1999). Additionally, each Web site may consist of multiple Web pages (or individual documents), making the Web an enormous information resource.

How are materials on the Web accessed?

Web sites and Web pages are accessed through a Web *browser*. Browsers are software programs that provide a means of finding and navigating the information on the Web. These programs read the *hypertext markup language* (HTML) that is used to create Web pages and translate it into text and graphics that are comprehensible to the user. Two of the most popular browsers in use today are Netscape and Microsoft Internet Explorer.

Each Web site is assigned a Uniform Resource Locator, or URL, that serves as the site's "address." A user types a site's URL into the browser page, hits Enter or Return on the keyboard, and the browser displays the site. To move from site to site, one can either type in new URLs or click on the *hypertext links* on a page or site. These links use texts and graphics on a Web site as the point of connection to other sites or pages, making navigation simple and fast.

A user looking for adult ESL instructional materials could type in the URL for the Web site of a source that deals with adult ESL issues: a local, state, regional, or national organization (e.g., National Clearinghouse for ESL Literacy Education, http://www.cal.org/ncle/; Teachers of English to Speakers of Other Languages, http://www.tesol.org/; Literacy Volunteers of America, http://www.literacyvolunteers.org/; Boston's Adult Literacy Resource Institute, http://www.alri.org/); an online publication (*Hands-on English*, http://www.handsonenglish.com/; *Focus on Basics*, http://gseweb.harvard.edu/~ncsall/fob/index.htm; *The Internet TESL Journal*, http://www.aitech.ac.jp/~iteslj/); or a database (e.g., Educational Resources Information Center [ERIC] Database, http://www.accesseric.org/; Canada's National Adult Literacy Database, http://www.nald.ca/). By typing in the URL for the source's Web site, the user can access that source's home page and from there use the links provided to access other relevant sites or pages.

The Web sites described in this article are not necessarily endorsed by NCLE. Furthermore, given the speed at which electronic resources change, it cannot be guaranteed that the Web sites will be current after publication of this Q&A.

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This process of moving from link to link (*surfing*) can provide an extensive overview of the variety of adult ESL resources available online. However, with an estimated 550 billion documents stored on the Web (Digital Divide Network, 2000), surfing without a plan can be endless. Also, unless the user has the address for a specific Web site, there is still the issue of where to start. A more efficient approach is to use tools for online searching.

What tools can be used to find materials on the Web?

Search engines and *directories*, or hybrids of the two, are the primary options available for searching on the Web. While these tend to be the most recognized search tools, *loops*, *rings*, and *portals* can also facilitate the searching process.

1. ***Search engines*** are like indices or catalogs of information on the Web. They match keywords or phrases that a user provides with information gathered and indexed from Web sites and pages (Hacker & Capehart, 1999; Mac@home, 1998). Most search engines are comprised of three parts: *spiders* or *crawlers*, which continuously visit and examine Web sites and pages; the *index*, which holds the information the spider or crawler finds; and the *search engine software*, which sifts through the information recorded in the index to find matches to keywords or phrases specified in a user's search (Monash Information Services, 1999; Sperling, 1998).

When using search engines, one is really searching the material already gathered and stored by them. While all search engines work on the same principle of classifying Web pages by keywords selected from the content, each search engine has its own specific system for scanning, indexing, and displaying the information it retrieves. Some search engines index every word on a Web page, while others index only the words mentioned at the top of a Web page or the words repeated throughout the page. Others index *metadata* (keywords and content descriptions) incorporated in the coding of the document by the creator of the Web site or page. To conduct truly effective searches, it is advisable to choose one or two search engines and become familiar with their search systems. Most search engines provide tutorials or "help" options on their search pages. Some popular search engines include Google (http://www.google.com/), Hotbot (http://www.hotbot.lycos.com/), Alta Vista (http://www.altavista.com/), Excite (http://www.excite.com/), and Lycos (http://www.lycos.com/).

Meta-search engines simultaneously search the databases compiled by a range of individual search engines, providing users with a set of comparative information on the top results produced by each of the individual search engines. Metacrawler (http://www.metacrawler.com/) and Dogpile (http://www.dogpile.com/) are examples of meta-search engines.

2. ***Directories*** also review and index Web sites and pages, but rather than using spiders and software programs, they rely on human editors and reviewers to select and organize sites and pages into categories that are based on topic content (Pandia Resources, 2000; Sperling, 1998). In addition, many provide keyword search capabilities within their directory structures. Directories do not offer as many search results as search engines provide. However, because information is indexed by people rather than software programs, and because a minimum standard for selection has usually been set, results of searches in directories tend to be more relevant than those done through a search engine. Two search directories are Yahoo (http://www.yahoo.com/) and LookSmart (http://www.looksmart.com/).

3. ***Web loops and rings*** offer a linear structure that can be used to browse collections of sites or pages that share a related topic of interest (e.g., English language teaching). The loop or ring provides a path through which users can move from one site or page to another, eventually visiting each thereby creating a "loop" of Web sites. The creators of the sites in a loop or ring decide which new sites will be added, based on their relevancy to the topic. Some loops and rings provide lists of all sites included and allow the user to choose those to be visited; others simply point to the next site in the collection, usually via navigational icons or directions (Davies, 1997/98). The ESLoop (http://www.linguistic-funland.com/esloop/), is an example of a Web loop.

4. ***Portals*** are becoming a popular means of organizing and providing access to information on the Web. Portals are Web sites that serve as gateways to a variety of services (e.g., search features, e-mail, electronic discussion forums, instant messaging, online shopping, calendars) and links to resources. Originally used on a broad scale (American Online is a portal), the term now also applies to sites that provide similar services and resources, but for narrower, more defined topic areas. For example, About.com is a portal that has a variety of smaller scale portals on specific topics such as ESL (see http://esl.about.com/).

Choosing appropriate search tools is a preliminary step in framing a search strategy. The decision should be based on both the user's familiarity with the topic and the type of information sought. Directories are a good option if the user has only a general knowledge of the topic and wants to see what is available or if the information desired is very common or very broad. For example, someone who has just volunteered to tutor an English language learner may find it easier to follow Yahoo's Education category to the "Literacy" subcategory or to investigate the ESLoop, rather than do a keyword search on Google and then sift through 4,460 results. Portals and loops and rings can provide many of the same advantages. However, if a user is looking for specific information, a search engine might be a better choice, as it provides a more complete picture of all types of information available online for that topic. Meta-search engines, like Metacrawler and Dogpile, are good options when a user has limited time or wants an overview of the range of information available on different search engines.

What is involved in creating a search strategy?

Creating a search strategy does not have to be time consuming or complicated. The process can be performed in four steps: preparation, creation and execution, review and revision, and evaluation (Hacker & Capehart, 1999; Harris, 1997; Monash Information Services, 2000; Sperling, 1998).

Preparation. The first step in creating a search is to define, as clearly and specifically as possible, the information desired. To do this, decide what information is needed (e.g., authentic assessment in adult ESL); the scope of information (e.g., everything about authentic assessment in adult ESL or information on one assessment tool, such as portfolios); and the type of documents that will provide the needed information (e.g., curricula, research reports, or models of portfolios). When these have been determined, identify the keywords—those that best describe the topic or content.

In identifying words that will represent the information in a search query, the user needs some content knowledge. If this is lacking, a review of off-line resources or a consultation with someone more familiar with the field can help generate keywords. Be as specific as possible. Think about the words that best represent the concepts or that might be most often repeated in a resource or document on the topic (e.g., "authentic assessment," not just "assessment"). Think about any synonyms or different word forms that might be used (e.g., "alternative assessment"). Consider any phrases that might be helpful (e.g., "performance-based assessment," "learner assessment," or "learner evaluation").

Creation and execution. Unless only one keyword has been identified, decisions about how to combine the terms need to be made. Following are some words and symbols that can be used to create search statements:

- **And, or, not** – Many search engines support Boolean logic, an algebraic deductive system. Boolean logic uses connecting words such as *and*, *or*, and *not* to indicate how keywords are to be treated in the search. *And* indicates that search results must contain all the words or phrases in the search statement (adult *and* ESL). *Or* indicates that results can contain any of the words or phrases in the search statement (adult and ESL *or* EFL). *Not* excludes a word or phrase in the search statement from the results (adult and ESL *not* EFL).
- **Plus or minus signs** – Plus (+) and minus (-) signs set absolutes of inclusion or exclusion in a search query. A plus sign directly in front of a word (no space) indicates that results must contain that word (adult +ESL). A minus sign directly in front of a word indicates that results must not contain that word (adult +ESL -EFL).
- **Quotes** – Adding quotes around words creates a phrase or unit. Use them whenever a concept or item is multiword, or when a phrase is needed, such as "adult ESL literacy" or "native language literacy."
- **Asterisk** – An asterisk indicates a wild card that prompts the search engine to find all forms of the word. It is usually placed to the right of the beginning or root of a word. For example, ESL teach* might bring up anything with ESL teaching, ESL teacher, or ESL teachers.
- **Parentheses** – Parentheses are used to create searches involving multiple concepts. As in math, parentheses signal groupings or relationships among terms. Example: "adult ESL" and (teacher* or tutor*)

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In creating a search for adult ESL language or literacy materials on the Web, some of the following words, phrases, or combinations might be helpful:

"ESL"

"English as a second language"

"adult ESL"

"ESL instruction" +adult

"second language instruction" +adult

"second language acquisition" +adult

"immigrant education" +adult

These words, phrases, or combinations can then be combined with other topics to target more specific information:

"adult ESL resources"

"adult ESL" and "statistics"

"adult ESL" and (assessment -standardized)

"ESL" and "grammar activities"

Review and revision. Once a search has been executed, it is important to review the results that have been posted before beginning to link to sites.

Most search engines either list results in order of relevance or assign confidence or relevancy rankings to them. If possible, find out how the sites are listed or ranked so results can be more accurately interpreted. To get a better idea of whether or not the search query returned the types of information desired, examine more than just the first few links listed in the results. Consider the following questions:

- How many sites resulted from the search? Too many? Too few?
- Do the results list basically the same types of sites? If not, which stand out? Are they closer to or farther from the information desired?
- Are there any repeated words or phrases in site descriptions that were not included or were included in a different way in the original search query?
- Are the sites listed repetitions of one site? Look at the URLs provided for the sites listed. Are different pages from the same site listed?
- Do the key words and concepts in the results match the key words and their intended meanings in the search query?

After examining the search results, the need to revise the original query may be apparent. Words or phrases may need to be changed (replaced with synonyms or words or phrases from the results), or added to either broaden (using the operator *or*), narrow (using the operator *and* or the plus sign), or refocus (using the operator *not* or the minus sign) the query. Most search engines will give the user the option to run a fresh search or to run the revised search on the results already collected.

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If the query still does not produce the desired information, a user can also investigate the advanced search options offered by most search engines. These options are usually specific to the search engine being used and allow the user to create even more complex and specific search queries.

Because the searching and indexing done by a search engine is an ongoing process, Web site listings and rankings may change frequently. A search query that is used several weeks or months after an initial try may yield different results, so try the searches again after some time has passed.

How can results be evaluated?

The final step in conducting Web-based searches is visiting and evaluating the chosen sites. Given the lack of established criteria for Web publishing and the Web's increasing accessibility, one cannot assume that its content is accurate, current, or fair (Hacker & Capehart 1999; Harris, 1997; Silc, 1998). It is the user's responsibility to determine which sites or pages are viable information sources.

Users can make informed inferences on the usefulness of a Web site or document by asking critical questions and considering the implications of the answers. Hacker and Capeheart (1999), Harris (1997), and Henderson (2000) suggest specific questions that address issues of relevance, authority, and accuracy.

Relevance

1. Who is the intended audience for this document or Web site?
2. What is the purpose of this document or site (e.g., to inform, to persuade, to sell)?
3. Do the intended audience and the purpose match the user's profile and purposes?
4. How well does the content answer the user's original question(s)?

Authority

1. Is the source of the document or site (including credentials, background, mission statement, or affiliations) clearly indicated?
2. Is contact information for the author or host provided?
3. Is this a credible or recognized source for the type of information being provided?
4. Has this author or site been acknowledged in other information sources, online or off?
5. Does the author or site use other sources to document its information?

Accuracy

1. Is the resource dated? Is it a recent date? Have updates been noted?
2. Are opposing or related views on the subject acknowledged, or is only one perspective presented?
3. Is the tone reasonable and appropriate to the content presented?
4. Are affiliations, biases, or conflicts of interest apparent? Are they acknowledged?
5. Does the information draw reasonably from known concepts and sources as well as integrate new ones?

Conclusion

The World Wide Web is increasingly being used to find resources for adult ESL professional development, instruction, and research (Hawk, 2000; Rosen, 1996). Understanding the available search tools and how to utilize their features is one aspect of the process. Evaluating the accuracy and usefulness of the Web resources is another. Understanding these aspects should make finding adult ESL resources on the Web less daunting and more productive.

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